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(54) HIGH DURABILITY REFRACTORY COMPOSITION

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(56) References Cited

U.S. PATENT DOCUMENTS

3,971,665 A 7/1976 Suzuki et al. 4,383,045 A 5/1983 Nagle et al. 4,923,831 A 5/1990 Uzaki et al.

FOREIGN PATENT DOCUMENTS

EP	0 119 812	5/1992
JP	62148377 A	1/1/01
JP	HEI 1-278469	11/1989
JP	HEI 3-170363	7/1991
JP	HEI 4-21573	1/1992
JP	05-286771	11/1993

OTHER PUBLICATIONS

O'Bannon, Dictionaryof Ceramic Science and Engineering, p. 45, 1984.*

Yorita et al, "Quick Hardening Gunning Refractory Composition," translation of JP 62-148377, Jul. 2, 1987.*

* cited by examiner

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(57) ABSTRACT

A high temperature hot strength magnesia-based refractory composition having high durability at elevated temperatures wherein a sulfamic acid in combination with an independent calcia source is added to a magnesia-based refractory material. The invention also provides for a refractory gunning composition for use in the production or repair of metallurgical furnace linings.

20 Claims, 2 Drawing Sheets